U.S. Environmental Protection Agency
Total Coliform Rule / Distribution System
Advisory Committee Meeting

September 18-19, 2007

Location:
RESOLVE, Inc.
1255 23rd Street, NW, Suite 275
Washington, D.C. 20037

Draft Meeting Summary

Meeting Objectives:

- *Approve proposed Committee protocols;*
- *Continue to learn about implementation of the current Total Coliform Rule and other topics, and share perspectives about implications for issues to consider both for revisions to the TCR and for data collection and research needs; and*
- *Provide additional direction to technical work group on potential information and analyses to support the advisory committee.*

I. Welcome, Introductions, Meeting Objectives and Agenda

Jini Mohanty, the Designated Federal Officer, opened the meeting and welcomed the meeting attendees and members of the Advisory Committee to this second meeting of the Total Coliform Rule / Distribution System Advisory Committee (TCRDSAC).[1]

Gail Bingham, the facilitator from RESOLVE, also welcomed Doug Owen of Malcolm Pirnie, who will serve as liaison between the TCRDSAC and the technical work group (TWG). Ms. Bingham noted that one of the lessons learned from previous Federal Advisory Committee processes was the importance of collaboration among the technical experts. She explained that when technical experts engage in a joint inquiry, look at the areas of agreement and disagreement, and then speak with a common voice, the Committee will receive information that all the experts see as credible.

Ms. Bingham then briefly reviewed the meeting agenda and the meeting objectives. She went over the materials provided to the Committee, including a series of wall charts that the TWG prepared in response to a request from the TCRDSAC at their July meeting for

[1] Please see Attachment A for the Total Coliform Rule/Distribution System Federal Advisory Committee roster. Please see Attachment B for a copy of the meeting agenda. Please see attachment C for a list of the meeting attendees.

a more complete outline of the steps of the Total Coliform Rule (TCR) monitoring and response process.[2]

Ms. Bingham briefly reviewed the changes in the summary from the TCRDSAC July meeting. The Committee approved the summary, which are the official minutes.[3]

II. Protocols

Ms. Bingham summarized the changes made to the draft protocols since the July meeting.

She noted that the open meeting guidelines also apply to TWG conference calls and meetings if nine or more Committee members (not including alternates) participate. In order to monitor this, she requested that Committee members e-mail RESOLVE in advance if they plan to attend a TWG meeting.

In response to a question from a Committee member, Ms. Bingham clarified that a "significant change," referred to in section 3(d), is anything any individual member considers to be significant. She emphasized the importance of shared understanding and voluntary agreement to achieve an end product that the entire Committee can support, and is in the public interest.

The Committee adopted the protocols by consensus.[4]

III. Presentations

Mr. Owen explained to the Committee the overarching framework of the presentations (objectives, provisions, compliance, improvement, research) that the TWG prepared for this meeting.[5] He noted that because of the large amount of information being presented, a framework might be helpful in relating each presentation back to the sequence of activities necessary for the Committee to meet its charge.

In response to a member's question, Mr. Owen stated that it is up to the Committee to deliberate on whether or not the TCR needs to be improved. The TWG is looking to the Committee to identify what information is needed to make that assessment.

[2] The wall charts are available upon request from Ms. Jini Mohanty, the Designated Federal Officer.
[3] Please see Attachment D for the minutes from the July 17-18, 2007 TCRDSAC meeting.
[4] Please see Attachment E for the protocols of the TCRDSAC.
[5] Please see Attachment F for a copy of Mr. Owen's presentation on the overarching framework.

A. Total Coliform Rule Within a Safe Drinking Water Act Context

Mr. Owen gave a presentation on the "Total Coliform Rule Within a Safe Drinking Water Act Context."[6] The goal of this presentation and the resulting discussion was to analyze the objectives of the TCR in the larger context of the Safe Drinking Water Act as it is now being implemented under the current regulatory framework.

The Committee asked clarifying questions and discussed the information presented. In the discussion, the following points were made:

- While community water systems (CWS) serve the majority of the population, and the majority of CWSs are small or very small, these small or very small CWSs serve only 9% of the population.
- There are several factors that make discussions about the links between TCR and the Ground Water Rule (GWR) or the Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR), as well as options for revisions to TCR, challenging: In some states, there are still a significant number of undisinfected groundwater systems; some systems only disinfect some of their water sources, mixing the disinfected water with water that has not been disinfected; not all systems are complying with the Stage 2 DBPR at this point in time; and GWR is yet to be implemented.
- The original 1989 TCR did not specify what needed to be included in a sanitary survey. The Interim Enhanced Surface Water Treatment Rule and the GWR list eight elements that sanitary surveys must address. In the TCR, sanitary surveys only apply to systems that serve 4,100 or fewer people.
- Sanitary surveys are done differently in different states.
- Implementing GWR and the Stage 2 DBPR, as well as any revisions to TCR, will cost a lot more for small systems and the small percentage of population they serve than for the large systems serving larger populations.
- There is great variability in how the different drinking water regulations are implemented, but especially in how TCR is implemented.

During the discussion, the Committee made several requests for information it would like to receive from TWG, including the following:

- Characterization of how state ground water disinfection regulations are implemented.
- Summary of violation rates for state disinfection requirements
- Summary of the differences in TCR violation rates in states that require all systems to disinfect vs. states that do not.
- GWR: linkages to TCR; what systems are covered by the GWR; implications for small systems; status of EPA GWR guidance documents.
- Sanitary surveys: What are the elements? How effective are they in protecting public health? How well are they done? How do different states respond? How often do violations occur? Are previous problems being addressed or do the same issues keep coming up?

[6] Please see Attachment G for a copy of Mr. Owen's presentation "Total Coliform Rule Within a Safe Drinking Water Act Context."

- Information from EPA documenting its decision to revise TCR after its six-year review of the rule.
- Information on how well TCR objectives are being met by other rules

B. Introduction to Public Health Considerations in Drinking Water

Alan Roberson, American Water Works Association, and Stig Regli, US EPA, gave a presentation on "How Public Health Information is Used to Inform Regulation Development."[7] The objectives of this presentation were: to review the basics of outbreak versus endemic illness as it relates to waterborne disease; to review how EPA uses public health information to inform regulatory decisions; and to provide a preview of additional public health information being planned for the October meeting.

The Committee asked clarifying questions and discussed the information presented. In the discussion, the following points were made:

- Approximately 2/3 of the disease associated with drinking water outbreaks is acute gastrointestinal (AGI) disease. The remaining third varies and can include respiratory disease (e.g. legionella), rashes, chemical burns, and neurological disease.
- The initial investigation after an outbreak focuses on food and does not include investigation of drinking water. By the time water is suspected as the source, it is sometimes too late to get samples. This may contribute to the underreporting of waterborne disease outbreaks (WBDOs).
- In a given day, the average person may get water from multiple distribution systems and treatment plants. This, compounded with the investigation lag time, can complicate an epidemiological evaluation.

One member explained that EPA has a statutory obligation to describe, either quantitatively or qualitatively, how revisions to a rule provide the equivalent or better protection of public health as the current rule. Another noted that this obligation places a constraint on the Committee because all of the provisions of TCR are helped by other rules. He suggested that it will be a challenge not to double-count the public health benefits of these rules.

One Committee member listed some potential sources of information on WBDOs. They were:

- Steve E. Hrudy & E.J. Hrudey (2004), *Safe Drinking Water—Lessons from Recent Outbreaks in Affluent Nations* (London: IWA Publishing).
- *Journal of Water and Health* (2006), Vol. 4, Supplement 2, *Estimating Disease Risks Associated with Drinking Water Microbial Exposures*. (The articles from this journal are available online at http://www.epa.gov/nheerl/articles/2006/waterborne_disease.html.)
- *Morbidity & Mortality Weekly Reports (available online at http://www.cdc.gov/mmwr/).*

[7] Please see Attachment H for a copy of Mr. Roberson's and Mr. Regli's presentation "How Public Health Information is Used to Inform Regulation Development."

- Pierre Payment, L. Richardson, J. Siemiatycki, R. Dewar, M. Edwardes & E. Franco (1991), "A randomized trial to evaluate the risk of gastrointestinal disease due to consumption of drinking water meeting current microbiological standards," *American Journal of Public Health* Vol. 81, No. 6, pages 703-708. (This article is available online at http://www.ajph.org/cgi/reprint/81/6/703.pdf.)
- Pierre Payment, J. Siemiatycki, L. Richardson, G. Renaud, E. Franco & M. Prevost (1997), "A prospective epidemiological study of gastrointestinal health effects due to the consumption of drinking water," *International Journal of Environmental Health Research* Vol. 7, Issue 1, pages 5-31.

As the Committee discussed the information it heard in the presentation on public health considerations, they made several requests for additional information from the TWG. The following is a summary of these requests:

- The portion of incidences of AGI due to water and drinking water.
- The breakdown of AGI incidences due to drinking water by system category (e.g. surface water versus ground water; disinfected versus not disinfected; treatment versus distribution system; and for distribution system outbreaks, within versus outside of utility jurisdiction).
- Case studies of WBDO, including information on the regulatory structure under which they occurred, the disinfection status of the system in which the outbreak originated, and the practices and procedures of that system.
- The public health benefit attributable to the TCR, broken down by the benefit gained from relying on the different components of TCR (or different indicators).

Over the course of the meeting, the Committee raised issues they may wish to discuss further as they deliberate their charge. During the discussion on public health, members suggested the following questions for further consideration:

- Should there be a checklist to help water system operators identify outbreaks similar to the one being developed for state investigators?
- Should TCR have stipulations for corrective actions?
- Would a different regulatory structure or different system procedures make an outbreak less likely?

C. Total Coliform Rule Indicator Framework

Mr. Owen gave a presentation on "Indicators Used in the TCR."[8] The objective of this presentation was to review the indicators used in the TCR, how the current indicators relate to the TCR objectives, and how other indicators could inform these objectives.

The Committee asked clarifying questions and discussed the information presented. In the discussion, the following points were made:

- The Centers for Disease Control and Prevention (CDC) has partnered with states to develop the first of several environmental health drinking water tools that

[8] Please see Attachment I for a copy of Mr. Owen's presentation "Indicators Used in the TCR."

sanitarians and epidemiologists can use during outbreak investigations as a checklist of things to investigate.
- Changing to a different indicator than Total Coliform (TC), which has been in use for 20-25 years, could be costly due to the need to set up a whole new infrastructure.
- Sanitary surveys are resource intensive for states and, as they are currently implemented, are performed every three years, which may be too far apart to adequately protect public health.

During the discussion on indicators, several Committee members requested additional information from TWG to assist their understanding of the topic. Included in these requests are the following:

- Indicators:
    - Analysis of various indicators, by system size and type, and what they may suggest about what is happening in a system;
    - Expansion of the table on "relative applicability of indicators" to include additional microbial and non-microbial indicators.
    - A matrix of indicators with the National Academy of Science's three levels of indicators (screening, public health investigation, source identification and mitigation), and what indicators fit into each level, with possible variations for different system types (in the context of their treatment barriers) or other dimensions.
    - Information on what TC shows about pathways for pathogens in the distribution system.
    - Pros and cons of changing indicators: if we shift away from indicators, how does that affect other rules?
    - Ways to increase the frequency of small systems reporting outbreaks when they occur.
    - Information on what indicators can be used by small systems to trigger an investigation;
    - Information on the international use of indicators; and
    - Summary of EPA's white paper on indicators.
- Sanitary surveys: What specifically is done; what does it take to perform one; how long do they take; how they are implemented under different rules; how they compare to water safety plans.
- GWR: How it works; how it interplays with TCR; how the GWR might be affected if the TCR moved away from indicators.
- Operators: What are the operator certification and requirements in different states? What could be done to round out the requirements? What additional tools would be helpful to them in addressing what is happening within the system? What would help increase their understanding of and support for sanitary surveys as a tool to protect public health?

Members also suggested several questions for further consideration by the Committee as it works through issues related to its charge. The following is a list of such questions:

- Are there approaches to consider other than indicators?

- Is there a need to change the indicator? Might it be sufficient instead to change the responses of systems to positive indicators?
- Is the use of indicators appropriate for small systems that take very few samples? Could sanitary surveys be sufficient?
- Should different indicators be used at different levels (as defined by NAS, see above).
- Should the Committee consider options in addition to repeat sampling as a response to a positive indicator sample (e.g., additional chlorine measurements or a system assessment)?

D. How States Implement the TCR and Implications for Utilities

Darrell Osterhoudt, Association of State Drinking Water Administrators, gave a presentation on "TCR Implementation: Challenges and Variability in Implementation."[9] The objective of this presentation was to help the TCRDSAC understand the variability in state implementation practices, in part to provide a context for analyzing the compliance information in the SDWIS and six year review databases, and also to understand the implications for utility practices.

Following the presentation on variations in implementation, the Committee asked several clarifying questions and discussed the information presented. In the discussion that followed, the following points were made:

- There is a large amount of variability in how TCR is implemented by states. This is due do the fact that TCR applies to all types of systems and requires a large amount of sampling and analyses, making resources a much bigger issue than for other rules. Generally, the states would like to keep this variability so they have the flexibility to work with a wide variety of types of water systems. There is also significant variability in the implementation of the Lead & Copper Rule.
- Though the TCR is a resource intensive rule, it is difficult to determine the burden of the rule because states work on the different drinking water rules in tandem. Many states will face a resource issue with the implementation of the GWR, as they do not anticipate additional resources and staffing becoming available.
- It is difficult to get local governing boards and officials to actively engage in TCR implementation and compliance, or to attend voluntary trainings. It is also difficult for boards of small systems to attend training seminars.
- The Association of State Drinking Water Administrators performed a survey approximately five or six years ago to try and understand the state burden by rule.

As the Committee considered the information they heard in the implementation presentation, they raised the need for several different pieces of information, including the following:

- TCR burden for States: What is the breakdown by task, system type, and system size for TCR versus other rules? How might this change with the implementation of GWR? What is the capacity of states to implement these rule changes in a

[9] Please see Attachment J for a copy of Mr. Osterhoudt's presentation "TCR Implementation: Challenges and Variability in Implementation."

short period of time? Where do States spend the most time? Where should they spend the most time? What aspects of the TCR are the most important in relation to public health?

- Information from the states with more stringent requirements in place, and an indication of what is working and what is not.
- The EPA national minimal guidelines for operator certification; and a summary of how these requirements vary by state.
- Compliance and Occurrence: Compare past violations and how those might change with revisions to TCR if the definition of a violation changes; information on confirmed and non-confirmed TCR violations.
- Analytical methods: Information on false positive and false negative rates for various tests; the reliability of different tests; which systems use which tests.
- The percentage of systems that have their own laboratories.
- For small systems, what is the significance of a single sample? Are there better ways for them to protect public health than to take a single sample and wait for the lab result?

Committee members also raised the following questions for further consideration in their deliberations:

- Should the Committee consider mandatory training on TCR for local governing boards and officials?
- How can the rule be revised to put more resources in areas that would make the most difference to public health?

E. Available Data Sources

Mr. Owen gave a presentation on "Available Data Sources and Possible Preliminary Analysis for TCR."[10] The objective for this presentation was to provide information about the characteristics of available data sources (including SDWIS, recent six-year review data from the states, and other utility data), and what types of questions these existing data can potentially help answer.

After the presentation, the Committee asked a series of clarifying questions. During the discussion that ensued, the following points were made:

- The Committee should not infer from the incompleteness of six-year review data that TCR is not important to states. For state administrators, TCR is the number one priority. However, not all states have the resources for a computerized system; and some states only present a summary of data on positive samples, not the vast majority of samples which are negative for TC.
- The request for six-year review data was voluntary; it included requests for information on other rules as well as TCR; and the response was better than EPA anticipated (42 replied, versus the 30 expected).
- The fact that most of the Gulf states did not respond to the six-year review data request could pose a challenge when analyzing the data.

[10] Please see Attachment K for a copy of Mr. Owen's presentation "Available Data Sources and Possible Preliminary Analysis for TCR."

- Data submitted in the six-year review from Tier 1 states are based on compliance samples and does not include any other samples they may take. Data from Tier 2 states may include data from special purpose samples. (One member cautioned the use of special purpose samples in the analysis because they could be take for any reason, including when water quality is known to be bad, for example, during water main breaks.)
- EPA performs data verifications for 16 or 17 states every year, which involves comparing data from the state database to data in the federal database.
- When the TWG presents information to the Committee, they will include a discussion of the limits of the data and any caveats about conclusions that can be drawn from the data.

Ms. Bingham then handed out a list of information requests compiled by the facilitators, to be used as a starting point for the Committee to discuss what questions the group would like the TWG to address, given the available data. In the discussion, Committee members made the following points:

- The biggest unknown variable in considering revisions to TCR is the GWR and how utilities will respond to it.
- There is no standardized surveillance of WBDOs. Outbreaks are usually initially identified by a doctor or health department that notices a cluster of reported cases.

During the discussion, the Committee members asked for the following additional information for TWG, some of which is related to earlier discussions on GWR, public health, indicators, and implementation:

- GWR: How the implementation of the GWR will affect the incidence of TC; how to predict a new baseline of occurrence in order to show improvements; how do systems that disinfect compare with those that do not.
- Public Health:
    - The public health benefits from the Surface Water Treatment Rule and from the GWR, separate from the TCR.
    - The public health benefits of treatment requirements versus distribution system requirements.
    - Characterization of how public health surveillance and reporting is carried out in different states.
    - Case studies about specific outbreaks to help focus the data analysis.
    - The risks associated with the distribution system (e.g. due to microbial and chemical contamination) separate from TC.
- Indicators: Information on TC or *E. coli* as predictors of public health risks.
- Implementation: Which states have more stringent regulations; how does this affect occurrence rates. (Take into consideration the need to talk with these states to fully understand their practices.)
- Compliance and Occurrence: The occurrence of *E. coli* in different systems as compared to TC; is there a way to correlate variations in indicator occurrence between states or system types, and variations in violation rates to public health outcomes?

- Is there a difference between data sets for the same groups of systems? If so, what are possible explanations for these differences?

During this discussion, Committee members also suggested the following questions as issues for consideration in deliberations on their charge:

- Because sanitary survey requirements are a key point in the GWR, does the Committee need to address sanitary surveys in the TCR?
- Should the Committee consider using standardized system size categories?

F. Summary of Existing Lists of Distribution System Elements and Prioritization Criteria

Mr. Owen gave a presentation on "Expert Workshops/Panels on Distribution System Issues: Summary of Outputs."[11] The objective of this presentation was to provide information about the elements of distribution systems identified in other forums (e.g. NAS and EPA workshops) that might be of interest for future information collection and research, and the criteria used in those forums for identifying possible priorities for attention.

Ms. Bingham explained that the agreement in principle produced by the TCRDSAC should contain recommendations for highest priorities for information collection and research in selected distribution system topic areas. She noted that because of limited resources and time, the Committee would logically not recommend research and data collection on every possible topic.

The Committee discussed how to prioritize the topics for data collection and research. One member encouraged the Committee to be clear on its objectives: What does it want to do? How will it accomplish this? What type of product would it like to have? He noted that there is a large universe of topics to research, but a much smaller set of research that could be implemented.

Another member reminded the Committee that the scope in the protocols specifically identified the topic of cross-connections and backflow as called for by the Microbial Disinfection Byproducts Federal Advisory Committee. He also noted that this topic ranked high on several lists.

One member expressed concern that the research and data collection goal put forth in the agreement in principle would lead to regulation at the federal level. A representative from EPA responded that regulation was not inevitable. She stated that the purpose of the charge was to determine what public health risks exist due to issues associated with drinking water distribution systems, and if there is a need for regulation.

In identifying priorities, members of the Committee suggested focusing on the following:

[11] Please see Attachment L for a copy of Mr. Owen's presentation "Expert Workshops/Panels on Distribution System Issues: Summary of Outputs."

- In relationship to TCR, what are the most important pieces of data that should be collected? Which areas need research?
- What needs to be done to fulfill TCR objectives of limiting pathogen occurrence and ensuring distribution system integrity?
- Analyze the different distribution system topic areas to determine if there is enough public health risk to warrant more data collection or research.
- Pay particular attention to areas of public health risk not addressed by TCR.
- Consider the value of looking at areas of intersection between distribution system issues and TCR; where there could be duplication of effort, determine if there is sufficient benefit to continue.

The Committee narrowed down the list of distribution system data collection and research issues for the TWG to work on at this time to the following:

- Cross connections and backflow;
- Biofilm and microbial ecology;
- New and repaired mains and main breaks;
- Storage facility integrity
- Pressure transients and intrusion;
- Aging infrastructure; and
- Nitrification.

The Committee also identified the information that would be helpful to know for each topic area:

- What is and is not known;
- The magnitude of risk;
- Opportunities for risk reduction; and
- Questions that need to be addressed to support decision-making.

The Committee also asked for the following information:

- Suggestions for systematic ways of prioritizing topics.
- A common definition of a distribution system.

Members discussed the framework the TWG should use to present information to the Committee. The Committee agreed to defer to the professional judgment of the technical experts on how to organize the information presented and how fast the TWG can provide the information. The group agreed to have the TWG put together a presentation on cross connections for the October meeting, while it continues working on the other topic areas. The Committee will then discuss whether or not they found the informational framework of the presentation useful and if it should be applied to the presentations on other topic areas.

IV. Issues Recap and Discussion

Ms. Bingham identified broad topics on the agenda – public health, compliance/occurrence analyses, and implementation – for the October TCRDSAC

meeting. She and the Committee then recapped and added to the information requested by the Committee.

Public Health

- CDC outbreak information broken out by:
  - Type of system,
  - Disinfection status,
  - Cause of the outbreak (treatment vs. distribution system issues), and
  - For distribution system outbreaks, those that occur within the jurisdiction of the utility and those that do not.
- Information on endemic disease.
- The relationship between indicators and outbreak information.
- The fraction of illness unreported.
- Information about variation in state reporting and surveillance.

Indicators

- Predictive values of each indicator with respect to public health hazards.
- What does a positive indicator sample really mean?
- Information on pathogens that are not being detected by current indicators.
- Information on the international use of indicators.
- The likelihood of false positives.

Compliance/Occurrence Analyses

- The variation in violation rates, and what that suggests.
- The differences in violation rates and indicator hit rates for different types, sizes, and categories of systems.
- The differences between data sets.

Implementation

- The "Day in the Life" of large and small systems (e.g. monitoring, reporting, public notification)
  - Information about systems that do more sampling than just the required.
- Sanitary surveys
  - The variability in state requirements.
  - What a sanitary survey entails.
  - Violations of sanitary survey.
  - Sanitary survey requirements under TCR, GWR, and Interim Enhanced Surface Water Treatment Rule.
  - The value of sanitary surveys in predicting public health risks.
- State and utility follow up activities to a positive sample.

Other Info

- Ground Water Rule
  - Relevant provisions of the rule.
  - Linkages to TCR.

    - Possible projection of future conditions for TC/EC occurrence once GWR is fully implemented.
- How well are various rules accomplishing TCR objectives? Which have the most impact?
- Analytical methods, distribution of methods currently used, and performance of each method.
- Information on national lab certification programs.
- Case studies – lessons learned from:
    - States with more stringent regulations,
    - Specific outbreaks.

V. Public Comment

Two members of the public provided comments to the Committee. The comment from David Brown of Sun City, FL is included in the meeting materials.[12] Bob Vincent provided a written response to Mr. Brown from the Florida Department of Environmental Protection.[13]

Chris Savaiano of SAVCO Corporation and Heil^{2}o, Inc. provided comment in person at the meeting.[14] He cited research that shows mitigation of water hammer should reduce the number of breaks. He described for the Committee the destructive impact of water hammer in the distribution system causes pipe failure (a catastrophic break or collapse) or a break. Mr. Savaiano urged the Committee to encourage surge protection and raise awareness of this issue, and to communicate surge mitigation options.

VI. Next Steps and Action Items

Ms. Bingham named those on the TWG's Public Health Task Group: Sharon Roy, Christine Moe, Joe Eisenberg, Joe Catruvo, and Jeff Griffiths. Gunther Craun and Paul Hunter have both been invited to join, but are unavailable for the October meeting. She also listed the liaisons from the TWG who will ensure that the work of the public health task group is integrated into the work of the TWG as a whole: Stig Regli, Alan Roberson, Erica Brown, Tom Schaeffer, Steve Via, and Scott Summers. She then noted that the facilitators have spoken with several Committee members about being a sounding board for the task group to ensure the Committee's questions are being answered. These members are Mark LeChevallier, John Neuberger, Harvey Minnigh, Carrie Lewis, Mae Wu, and Lynn Thorp.

[12] Please see Attachment M for a copy of Mr. Brown's public comment.
[13] Please see Attachment N for a copy of the Florida Department of Environmental Protection's response to Mr. Brown.
[14] A copy of Mr. Savaiano's public comment is available from the Designated Federal Officer.

The following action items came out of the meeting:

TASK	WHO	WHEN
Provide summary of 9/18-19 meeting.	RESOLVE	Early October
Provide background documentation for EPA's process during the six year review and rationale for choosing to revise the TCR.	EPA	By October 17-18 meeting
Provide a summary of the EPA guidelines for operator certification.	EPA	By October 17-18 meeting
Provide information about the national laboratory certification program.	EPA	By October 17-18 meeting.
Provide edits and additions to the list of informational requests compiled by the facilitators and handed out at the meeting.	TCRDSAC members	By October 17-18 meeting
Begin to respond to the TCRDSAC's requests for information, using professional judgment about what is feasible given the available data and time constraints.	TWG	Ongoing
Provide any comments about the meeting summary to the facilitators.	TCRDSAC members	At October TCRDSAC meeting
Provide any comments about the agenda for the October 17-18 meeting.	TCRDSAC members	After the draft agenda is distributed

The technical workgroup will next meet on October 16, 2007 in Washington, D.C. The TCRDSAC will next meet on October 17-18, 2007 in Washington, D.C.

NOTE: This document was prepared by the facilitators for consideration by the Total Coliform Rule Distribution System Advisory Committee and does not constitute a product of the Committee. The Total Coliform Rule Distribution System Advisory Committee is a federal advisory committee chartered by Congress, operating under the Federal Advisory Committee Act (FACA; 5 U.S.C., App.2). The Committee provides advice to the Administrator of the U.S. Environmental Protection Agency on revisions to the Total Coliform Rule (TCR), and on what information about distribution systems is needed to better understand the public health impact from the degradation of drinking water quality in distribution systems. The findings and recommendations of the Committee do not represent the view of the Agency, and this document does not represent information approved or disseminated by EPA.

Attachments

Attachment A – Federal Advisory Committee roster
Attachment B – Meeting agenda
Attachment C – Meeting attendees
Attachment D – TCRDSAC July 17-18, 2007 meeting minutes
Attachment E – TCRDSAC Protocols
Attachment F – Doug Owen's presentation "Presentation Framework"
Attachment G – Doug Owen's presentation "Total Coliform Rule Within a Safe Drinking Water Act Context"
Attachment H – Alan Roberson and Stig Regli's presentation "How Public Health Information is Used to Inform Regulation Development"
Attachment I – Doug Owen's presentation "Indicators Used in the TCR"
Attachment J – Darrell Osterhoudt's presentation "TCR Implementation: Challenges and Variability in Implementation"
Attachment K – Doug Owen's presentation "Available Data Sources and Possible Preliminary Analysis for TCR"
Attachment L – Doug Owen's presentation "Expert Workshops/Panels on Distribution System Issues: Summary of Outputs"
Attachment M – Public Comment from David Brown
Attachment N – Response from the Florida Department of Environmental Protection to Mr. Brown

* The meeting presentations and other documents can be found online at http://www.epa.gov/safewater/disinfection/tcr/regulation_revisions_tcrdsac.html.

U.S. Environmental Protection Agency
Total Coliform Rule/ Distribution System
Advisory Committee Meeting
September 18-19, 2007
Meeting Attendees

John Albert, AwwaRF
Sarah Bahrman, U.S. EPA
David Baird, National Rural Water Association*
Zeno Bain, U.S. EPA
Pamela Barr, U.S. EPA*
Jeremy Bauer, U.S. EPA
Carolyn Berndt, National League of Cities
Scott Biernat, Cadmus
Gail Bingham, RESOLVE
Eric Bissonette, U.S. EPA
Kevin Brombers, U.S. SBA
Manja Blazer, IDEXX
Erica Brown, Association of Metropolitan Water Agencies*
Gary Burlingame, Philadelphia Water Department
Jimmy Chen, U.S. EPA
Jacqueline Cohen, National Resources Institute
Sean Conley, U.S. EPA
Cesar Cordero, U.S. EPA
Tom Crawford, Native American Water*
Debbie Dalton, U.S. EPA
Cynthia Dougherty, U.S. EPA*
Glenn Farber, U.S. EPA
Patti Fauver, Environmental Council of the States*
Michael Finn, U.S. EPA
Melinda Friedman, HDR
J. Steve Fries, AAAS
Rich Giani, DC Water and Sewer Authority
Jonathan Gledhill, Policy Navigation Group
Kathy Grant, RESOLVE
Tom Grubbs, U.S. EPA
Yu-Ting Guilaran, U.S. EPA
Katherine Hamner, Cadmus Group, Inc.
Curtis Haymore, Cadmus Group, Inc.
Christine Maloni Hoover, National Association of State Utility Consumer Advocates*
Mary Howell, Backflow Management, Inc.
Chuck Job, U.S. EPA
Henry Kim, U.S. FDA
Dan Kroll, HACH Homeland Security Technologies
Maggie Lavay, U.S. EPA
Mark LeChevallier, National Association of Water Companies*

Debbie Lee, RESOLVE
Vanessa Leihy, Cadmus Group, Inc.
Frank Letkiewicz, Cadmus Group, Inc.
Audrey Levine, US EPA
Carrie Lewis, American Water Works Association*
Maria Lopez-Carbo, U.S. EPA
Gary Lynch, National Association of Water Companies*
Richard Mason, EMD Chemicals, Inc.
Mike Messner, U.S. EPA
Harvey Minnigh, Rural Community Assistance Partnership*
Jini Mohanty, U.S. EPA
John Neuberger, The University of Kansas Medical Center*
Eva Nieminski, Environmental Council of the States*
Darrell Osterhoudt, Association of State Drinking Water Administrators*
Doug Owen, Malcolm Pirnie
Angela Page, U.S. EPA
Graciela Ramirez-Toro, CECIA-IAUPR
Stig Regli, U.S. EPA
Kevin Reilly, U.S. EPA
Alan Roberson, American Water Works Association*
Jeff Rosen, Clancy Environmental Consultants, Inc.
Ken Rosenfeld, National League of Cities*
Kenneth Rotert, U.S. EPA
Sharon Roy, Centers for Disease Control and Prevention
Rick Sakaji, East Bay Municipal Utility District
Chris Savaiano, SAVCO Corporation/Heil^{2}o
Tom Schaeffer, American Metropolitan Water Agencies
Paul Schwartz, University of Southern California – FCCCHR
John Scheltens
Nicole Shao, U.S. EPA
Susan Shaw, U.S. EPA
Tim Sherer, U.S. EPA
Charlotte Smith, Charlotte Smith & Associates
Vanessa Speight, Malcolm Pirnie
Scott Summers, University of Colorado at Boulder
Lynn Thorp, Clean Water Action*
Bruce Tobey, National League of Cities*
Steve Via, American Water Works Association
Bob Vincent, National Environmental Health Association*
David Visintainer, Association of Metropolitan Water Agencies*
Paul Whittemore, National Rural Water Association*
Erik Winchester, U.S. EPA
Mae Wu, Natural Resource Defense Council*
Yvonne Yuen, U.S. EPA

* Advisory Committee member or alternate